RESEARCH PROBLEM STATEMENT

Problem Title:	Design and Development of a Context Sensitive Visual Resource Assessment and Management (VRAM) System for UDOT	No.: 05.04-1
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1. Briefly describe the problem to be addressed:

Quantifying visual impacts for new highway projects is an environmental document requirement. Several states are beginning to use VRAMs as an environmental evaluation tool for these visual resources and they could be compared to other methods that we routinely use such as: the TNM model for noise analysis and CO Hot Spot Analysis for air quality analysis.

UDOT would benefit from a VRAM system designed to work within the great diversity of landscapes through which our state's highways pass. Various federal agencies have separate and conflicting visual resource analysis and management systems therefore, UDOT needs a system that works with the various agency systems. The UDOT VRAM will be closely tied to the FHWA visual impact analysis procedures.

Strategic Goal: ☒ Preservation ☐ Operation ☒ Capacity ☐ Safety (Check all that apply)

VRAM implementation would preserve the visual resources of our existing roadsides. It's also a key for new capacity approvals since projects such as adding lanes in canyons or urban roadway capacity require visual resource impact analysis and mitigation. VRAM implementation would accomplish these visual resource tasks associated with projects more confidently and rapidly.

2. List the research objective(s) to be accomplished:

1. Design a feasible and practical VRAM system for UDOT.
2. Design appropriate strategies to effectively interface UDOT VRAM with USFS, BLM, NRCS, et al VRAM systems, thereby facilitating and streamlining federal agency approvals of UDOT projects.
3. Develop a workbook approach to UDOT VRAM system implementation.
4. Develop a modular organization for applying the new system to UDOT highway projects in various landscapes in a context sensitive fashion.

3. List the major tasks required to accomplish the research objective(s): Estimated person-hours

1. Research the visual resource analysis and management need in UDOT. (200 hrs)
2. Conduct appropriate literature and case study review. (200 hrs)
3. Compare various federal and state agencies VRAM systems including other state DOT's, and identify critical components for interface linking with the new UDOT VRAM system. (500 hrs)
4. Using the FHWA system as the umbrella, incorporate findings of 1-3 above in the design of a new UDOT VRAM system. (800 hrs)
5. Review and discuss with UDOT stakeholders at each step in the system design process. (100 hrs)
6. Utilize rapid prototyping approach to UDOT VRAM system development (design pilot system; test system on one or two UDOT projects; analyze results; initiate revisions; retest and finalize system). (400 hrs)

4. Outline the proposed schedule (when do you need this done, and how we will get there):

We could use the end product today, but realistically would like to see it done within one year.

5. Indicate type of research and / or development project this is:

Large: ☐ Research Project ☒ Development Project
Small: ☐ Research Evaluation ☐ Experimental Feature ☐ New Product Evaluation ☐ Tech Transfer Initiative ☐ Other_____

6. What type of entity is best suited to perform this project (University, Consultant, UDOT Staff, Other Agency, Other)?

University or Consultant who has experience with VRAMs

7. What deliverable(s) would you like to receive at the end of the project? (e.g. useable technical product, design method, technique, training, workshops, report, manual of practice, policy, procedure, specification, standard, software, hardware, equipment, training tool, etc.)

A VRAM procedural (how to) manual that is acceptable to the various agencies and UDOT, which has been field-tested on a couple of UDOT projects and revised based upon the outcome of the tests.

8. Describe how will this project be implemented at UDOT.

Once the manual is completed and approved, UDOT will need to incorporate VRAM into their environmental process. Consultants and UDOT environmental staff will need to be brought up to speed on the new process.

9. Describe how UDOT will benefit from the implementation of this project, and who the beneficiaries will be.

Currently UDOT does not have a process in place to evaluate visual resources. This project would develop a VRAM process for UDOT to be used by landscape architects, environmental staff and consultants.

Improve response to the requirement in EAs and EISs for Visual Resource Assessments while improving relations with Federal Agencies.

Improved management of the scenic resources of the state along UDOT highways.

Improved public relations through better management of scenic resource impacts associated with UDOT projects.

Decreased project review, analysis, and public hearing costs resulting from the implementation and use of a rational and defensible system for managing scenic resources and impacts associated with UDOT projects.

10. Describe the expected risks, obstacles, and strategies to overcome these.

Developing a VRAM process that is suitable to all agencies involved. - Early coordination with all agencies and keeping them involved in the process should alleviate the problem.

Visual analysis/management is new to UDOT so changing the way we do business could be an obstacle. – Developing an easy process to follow and being properly trained will alleviate these issues.

11. List the key UDOT Champion of this project (person who will help Research steer and lead this project, and will participate in implementation of the results): Lars Anderson and Terry Johnson

12. Estimate the cost of this research study including implementation effort (use person-hours from No. 3): 2200 hrs. X $40 = $88,000

13. List other champions (UDOT and non-UDOT) who are interested in and willing to participate in the Technical Advisory Committee for this study:

Name	Organization/Division/Region	Phone	Attended UTRAC?
John C. Ellsworth	Utah State University		
David Hatch	U S Forest Service	524-3949	
Greg Punske	FHWA	963-0078	
Chris Hartman	U S Forest Service		
Rob Sweeten	BLM, Moab		
Brandon Weston	UDOT Reg. 3	277-8089	

14. Identify other Utah agencies, regional or national agencies, or other groups that may have an interest in supporting this study:

a. Division of Wildlife Resources http://www.wildlife.utah.gov/ (reason being that wildlife viewing is often considered an aesthetic experience and is often done from a moving vehicle);
b. Envision Utah http://www.envisionutah.org (reason being they are concerned with many aspects of transportation planning, growth, etc. and visual/scenic resources are part of that planning);
c. Automated Geographic Reference Center http://agrc.its.state.ut.us/ (reason being there would likely be a GIS component to this research and they are at the forefront of state agencies in this regard);
d. Utah Travel Council http://www.utah.com/ (reason being they support and promote tourism in Utah including along state highways and scenery is a major marketing factor);
e. Utah Department of Community and Economic Development http://dced.utah.gov/community/community.html (reason being they support downtown appearance and economic development in Utah cities and towns and UDOT highways often traverse these communities and in many are the Main Street in those communities);
f. Utah Historical Society http://history.utah.gov/ (reason being they support historic presevation and various history programs, and UDOT highways often traverse historic landscapes and pass within viewsheds of historic sites, and the UDOT VRAM would address these "historical context sensitive" sites and landscapes);
g. Utah Division of Travel Development http://travel.utah.gov/ (reason being they support Scenic Byways and highways, indeed they publish a "Utah! Scenic Calendar" which highlights 16 of Utah's 28 Scenic Byways);
h. Utah Department of Environmental Quality http://www.eq.state.ut.us/ (reason being that visual/scenic resources are a major part of the quality of the Utah environment);
i. Utah Division of Forestry, Fire, and State Lands http://www.ffsl.utah.gov/ (reason being the state forest lands are a major source of visual/scenic quality and also these lands are often adjacent to National Forest and BLM lands where visual resource management is required);
j. Department of Natural Resources http://www.nr.utah.gov/ (reason being they manage for outdoor recreation and visual/scenic resources are a major factor in that);
k. Division of Oil, Gas, and Mining http://ogm.utah.gov/ (reason being oil and gas and mining often occurs on federal lands or state lands which are highly visible from UDOT highways and surface mines and oil and gas fields are highly controversial in terms of visual/scenic impacts);
l. Division of Parks and Recreation http://www.stateparks.utah.gov/ (reason being they manage state parks and visual/scenic issues are very important to users of the state Parks);

Robert Draper, FHWA Planner & Director of National Scenic Byways Program, Washington D.C.

Ramiro Villalvazo, US Forest Service Chief Landscape Architect, Washington D.C.

Robert Snieckus, NRCS, Chief Landscape Architect, Washington, D.C.

Brad Cownover, BLM Chief Landscape Architect, Washington, D.C.

Blaise Grden, Army corps of Engineers Planner, Walla Walla, Washington